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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/708,926

04/01/2004

Mark A. Fredette

24.0808

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23718

7590

06/16/2008

SCHLUMBERGER OILFIELD SERVICES

200 GILLINGHAM LANE

MD 200-9

SUGAR LAND, TX 77478

EXAMINER

SCHINDLER, DAVID M

ART UNIT

PAPER NUMBER

2862

MAIL DATE

DELIVERY MODE

06/16/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/708,926	<b>Applicant(s)</b> FREDETTE ET AL.	
	<b>Examiner</b> DAVID M. SCHINDLER	<b>Art Unit</b> 2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 February 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10-22, 25-27, 29, 40 and 41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 4, 10-22, 25-27, 29 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. This action is in response to the communication filed 2/29/2008. In view of Applicant's Remarks, the Final Rejection of 7/25/2007 is withdrawn.

***Information Disclosure Statement***

2. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892 or considered on form PTO-1449, they have not been considered.

***Response to Arguments***

3. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's Appeal Brief filed 2/29/2008 is acknowledged. In the brief, applicant argues against the combination of the references noted in the previous office action, specifically that solenoidal or coil/loop-antennas such as those disclosed by Mumby (U.S. 5,563,512) and those generally found on propagation

Art Unit: 2862

or induction tools are approximated by magnetic dipoles (not electric dipoles) (see lines 4-6 on page 10 of the brief), and that the phrase "lateral resistivity sensor" excludes a solenoidal antenna and other coil-type antennas for induction or propagation tools (see the last two lines on page 12 of the brief). Applicant further states that the phrase "lateral resistivity sensor" includes electrodes or electrode equivalent devices (lines 7-8 of the middle paragraph of page 9 of the brief), such as electrodes and toroidal antennas (see lines 3-4 on page 10 of the brief), but excludes sensors such as coils used on induction or propagation tools (line 8 of the middle paragraph of page 9 of the brief). Applicant argues that the phrase "lateral resistivity sensor" has a definite meaning to one skilled in the art and that this meaning is clearly supported by Applicant's Specification (see lines 1-2 of page 9 of the brief). Applicant states that the Examiner has failed to use the ordinary and customary meaning of the phrase as understood by one of ordinary skill in the art and as clearly delineated in Applicant's Specification (see the last 3 lines of the middle paragraph of page 9).

5. The Examiner notes paragraph [0008] of Applicant's specification which states that a lateral tool uses one or more antennas or electrodes to inject low-frequency transverse

magnetic fields into the formations to determine borehole and formation responses by measuring the current flow in the formations to the receivers, and that lateral resistivity tools are generally responsive to azimuthal variations in formation resistivities around the borehole. The Examiner further notes paragraph [0009] of Applicant's Specification in which it is stated "To detect currents that flow in the formation, a lateral tool uses an electrode (e.g. ring electrode or button electrode) receiver or a toroidal receiver." It therefore appears, in light of the specification, and in view of applicant's arguments, that the ordinary meaning of a lateral resistivity sensor is a sensor that is either an electrode or a toroidal receiver. This appears to be explicitly stated in Applicant's specification. This meaning therefore excludes solenoidal coil antennas or other similar sensing systems as noted by applicant's arguments.

6. The Examiner is therefore utilizing the ordinary meaning of the phrase "lateral resistivity sensor" to mean a sensor that is either an electrode or toroidal receiver in rejection found below.

#### ***Claim Objections***

7. Claim 17 is objected to because of the following informalities:

Art Unit: 2862

8. As to Claim 17,

9. It is not clear how the gap is incorporated in the shield.

10. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 10-15, 17-22, 35, 36, 39, 40, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Redwine et al. (Redwine) (U.S. 3,408,541) in view of Applicant's Admitted Prior Art (AAPA).

13. As to Claims 10 and 35,

14. Redwine discloses an elongated tubular having a longitudinal axis and adapted for subsurface disposal (Figures 1 and 2), a lateral resistivity sensor (40) disposed in a recess (see note below) in the elongated tubular, a shield (43) disposed on and about the tubular to cover the recess and the lateral resistivity sensor (Figure 3-A), and an insulating mechanism including a circumferential gap, the circumferential

Art Unit: 2862

gap extending continuously about the tubular to prevent electric current flow in the shield in a direction parallel to the longitudinal axis of the tubular near the lateral resistivity sensor (Figure 3-A) (Column 3, Lines 33-45).

15. Redwine does not disclose a propagation or induction resistivity antenna disposed on the elongated tubular.

16. AAPA discloses a propagation or induction resistivity antenna disposed on the elongated tubular (Page 7, Paragraph [0012]).

17. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Redwine to include a propagation or induction resistivity antenna disposed on the elongated tubular as taught by AAPA in order to provide a shallow depth of investigation and to provide better identification of zones invaded with conductive mud (Page 7, Paragraph [0012]).

18. (It is noted to applicant that Redwine discloses that the receiver (40) is embedded in (42) (Column 3, Lines 48-50). This can further be seen in Figure 3-A. Redwine also discloses that the outside diameter of the cylinder (42) corresponds generally with the maximum diameter of the sub (20) (Column 3, Lines 46-48). Therefore, even though (42) is mounted on (20), there must be a recessed portion in (20) such that the outside diameter of

Art Unit: 2862

cylinder (42) corresponds with the maximum diameter of (20).

Also note that the mandrel (22) appears to increase in diameter right below (42) in Figure 3-A. Thus it appears that (42) is located in a recessed portion of (22)).

19. As to Claim 11,

20. Redwine discloses the lateral resistivity sensor includes a toroid (Figure 2).

21. As to Claim 12,

22. Redwine does not disclose an electrode disposed on the tubular, the electrode selected from one of a ring electrode, button electrode, and a combination thereof.

23. AAPA discloses an electrode disposed on the tubular, the electrode selected from one of a ring electrode, button electrode, and a combination thereof ((Figure 1B) and (Pages 5-6, Paragraph [0010])).

24. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Redwine to include an electrode disposed on the tubular, the electrode selected from one of a ring electrode, button electrode, and a combination thereof as taught by AAPA in order to advantageously provide a measurement of azimuthally averaged current and provide high-resolution imaging (Pages 5-6, Paragraph [0010])).

25. As to Claim 13,



Art Unit: 2862

26. Redwine discloses the lateral resistivity sensing includes an insulating base layer (Column 3, Lines 42-54) disposed in the recess in the tubular (Figure 3-A), and a toroidal antenna (40) disposed over the insulating base layer (Figure 3-A).

27. As to Claim 14,

28. Redwine discloses the toroidal antenna includes a conductive wire disposed over the insulating layer ((Figures 2 and 3-A) and (Column 3, Lines 42-54)).

29. As to Claim 15,

30. Redwine discloses the toroidal antenna include a toroidal core formed from a magnetically permeable material wrapped in the tubular recess ((Figure 2 and 3-A) and (Column 4, Lines 3-12)).

31. As to Claim 17,

32. Redwine discloses the circumferential gap is a continuously extending gap incorporated in the shield (Figure 3-A).

33. (The Examiner is interpreting the space (gap) below the shield in Figure 3-A to be the gap).

34. As to Claim 18,

35. Redwine discloses the circumferential gap is filled with an insulating material ((Figure 3-A) and (Column 3, Lines 42-54)).

36. As to Claims 19 and 40,

Art Unit: 2862

37. Redwine discloses the circumferential gap includes an electrically insulating material disposed between a junction formed between the shield and the tubular (Figure 3-A).

38. As to Claim 20,

39. Redwine does not disclose a section of the shield positioned over the induction or propagation resistivity antenna includes at least one slot filled with an insulating material.

40. AAPA discloses a section of the shield positioned over the induction or propagation resistivity antenna includes at least one slot filled with an insulating material ((Figure 2B) and (Pages 8-9, Paragraph [0015])).

41. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Redwine to include a section of the shield positioned over the induction or propagation resistivity antenna includes at least one slot filled with an insulating material as taught by AAPA in order to allow a magnetic field to propagate through the shield while still providing protection from the environment.

42. As to Claim 21,

43. Redwine in view of AAPA does not disclose the recess contains both the induction or propagation resistivity antenna and the lateral resistivity sensor.

Art Unit: 2862

44. However, it would have been obvious to a person of ordinary skill in the art at the time of invention to modify Redwine in view of AAPA to rearrange and relocate the position of the induction or propagation resistivity antenna to include the recess contains both the induction or propagation resistivity antenna and the lateral resistivity sensor in order to reduce the amount of material needed for construction (MPEP 2144.04).

45. As to Claim 22,

46. Redwine discloses the tubular is a drill collar (Figures 2 and 3-A).

47. As to Claim 36,

48. Redwine discloses the lateral resistivity sensor includes a base layer (Column 3, Lines 42-54) of an insulating material in the recess in the tubular (Figure 3-A), and assembling the toroidal antenna includes a toroidal core (39) and a conductive wire (40) wound around the toroidal core (Figure 2), wherein the toroidal core includes a magnetically permeable material wrapped around the insulating base layer ((Figures 2 and 3-A) and (Column 3, Lines 42-54) and (Column 4, Lines 3-12)).

49. As to Claim 39,

50. Redwine discloses the circumferential gap is incorporated in the shield assembly and is filled with an insulating material ((Figure 3-A) and (Column 3, Lines 42-54)).

51. (The Examiner is interpreting the space (gap) below the shield in Figure 3-A to be the gap).

52. As to Claim 41,

53. Redwine discloses the circumferential gap is incorporated into the tubular and positioned between the shield and the tubular (Figure 3-A).

54. (The Examiner is interpreting part of the recess of the tubular to be the gap).

55. Claims 16 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Redwine et al. (Redwine) (U.S. 3,408,541) in view of Applicant's Admitted Prior Art (AAPA) as applied to claims 10 and 35 and in further view of Sinclair (6,100,696).

56. As to Claim 16,

57. Redwine in view of AAPA disclose as explained above.

58. Redwine in view of AAPA do not disclose the lateral resistivity sensor includes a pressure compensating mechanism.

59. Sinclair discloses the lateral resistivity sensor includes a pressure compensating mechanism ((Figure 1) and (Column 6, Lines 17-35)).

60. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Redwine in view of

Art Unit: 2862

AAPA to include the lateral resistivity sensor includes a pressure compensating mechanism as taught by Sinclair in order to remove high pressure differentials from the sensor package (Column 6, Lines 30-32).

61. As to Claim 37,

62. Redwine in view of AAPA does not disclose adapting the recess in the tubular with a pressure compensating mechanism.

63. Sinclair discloses adapting the recess in the tubular with a pressure compensating mechanism ((Figure 1) and (Column 6, Lines 17-35)).

64. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify Redwine in view of AAPA to include adapting the recess in the tubular with a pressure compensating mechanism as taught by Sinclair in order to remove high pressure differentials from the sensor package (Column 6, Lines 30-32).

### ***Conclusion***

65. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID M. SCHINDLER whose telephone number is (571)272-2112. The examiner can normally be reached on Monday-Friday (8:00AM-5:00PM).

66. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Assouad can be

Art Unit: 2862

reached on (571) 272-2210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

67. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David M. Schindler  
Examiner  
Art Unit 2862

DMS

/Patrick J Assouad/  
Supervisory Patent Examiner, Art Unit 2862